ANALOX 6000 – Pressure/Depth Monitor

User Manual

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WARNING

These instructions should be read and understood by all individuals who will be responsible for operation of the Analyser. The actions taken as a result of the measured levels must be in strict accordance with the Company and Government Regulations.

INTRODUCTION

The ANALOX 6000 Pressure Monitor provides a continuous digital display of pressure or depth, measured by a 4-20mA Transmitter.

The instrument displays the measured value on a 4 1/2 Digit red LED configured to read over the range specified by the customer at time of ordering.

The resolution of the display may be selected at any time, with a front panel switch, which effectively suppresses the least significant digit without affecting the scaling of the instrument.

The 24 volt DC supply for the sensor/transmitter is provided by the ANALOX 6000 instrument.

The Instrument is easy to calibrate, using the 'ZERO' and 'CAL' adjustments on the front panel.

User adjustable high and low audio/visual alarms, together with relays, are fitted as standard and these may be adjusted over the full range of the instrument. The relay outputs are available on the Instrument rear panel.

Several power supply options are fitted on all instruments, as standard.

Input 1 is a standard IEC 3 pin connector for AC power in the range 85 to 264 VAC, 47 to 63 Hz WITHOUT switching or selecting.

Input 2 is a standard co-axial battery charger type connector or a 2 way screw terminal type connector for low voltage power input in the following range:

DC 12v to 32v

Note: Polarity of connection of DC is important.
External power status is indicated by an LED on the front panel.

CALIBRATION

The instrument and sensor assemblies are fully calibrated before they leave the factory and should not require frequent re-calibration.

1. Zero Check/Adjustment

Select the 'HI RES' range **on** the instrument and subject the sensor to Atmospheric Pressure. Using the trimming tool provided with the instrument or a small instrument screwdriver, adjust the ‘ZERO’ control until the display reads 0.0 (Gauge sensors only) or the correct atmospheric pressure (Absolute sensors only).

Note: The low alarm may trip during the zero setting process.

2. Span Adjustment

With the instrument still set to the 'HI RES' range, subject the sensor to a convenient, accurately known pressure near to the value most commonly monitored or, as high as possible, within the instrument/sensor range. Allow the reading to stabilise and adjust the ‘CAL’ control on the instrument until the displayed reading agrees with the known standard. The High alarm may trip during the Span adjustment, depending on the setpoint.

This completes the Calibration process.

ALARM OPERATION

If an alarm condition occurs, the internal audible buzzer will sound intermittently and the yellow 'HORN' LED will flash, thereby identifying which instrument is causing the alarm. The appropriate red 'HI' or 'LO' LED will indicate the alarm level. The audible alarm can then be silenced by pressing the 'MUTE' button; this action will also turn off the yellow 'HORN' LED. If the reading is still in an alarm condition, the red 'HI' or 'LO' LED will continue to flash until the measured value returns within the normal band. The red LED will then turn off. If an alarm condition occurs and the measured value then returns to normal before the 'MUTE' button is pressed, then the audible and visual alarms will continue to be active until the 'MUTE' button is pressed. This facility allows the operator to be aware of any alarm occurrence whilst the instrument was unattended.

The alarms have a built-in hysteresis of approximately 0.25% of full scale to overcome 'nuisance' triggering when measuring near the set points. This means that if a high alarm occurs with a set point of 35.0, on a 0-100mtr Instrument, then having been acknowledged by pressing the MUTE button, the alarm will not clear until the measured value drops below 34.75mtr.

ALARM SETTING

Before any adjustments are made to the 'SET ALARM' controls, the operator should release the locks on the knobs. This is done by moving the small lever located at the edge of the control until the knob turns freely. After adjustment, the locks should be reset in order to prevent accidental movement.

The 'SET HI'/'SET LO' toggle switch is normally biased to its central position to read the measured value. The high alarm trip point is set by moving this switch upward and adjusting the 'SET HI ALARM' control knob until the desired high alarm trip level is displayed. The low alarm trip point is set by moving the switch downward and adjusting the 'SET LO ALARM' control knob until the desired level is displayed.

If the operator only requires to check the currently set alarm points this may be done by just pressing the 'SET HI'/'SET LO' switch to the appropriate position, and reading the levels on the LED display.

NOTE: The mechanical locking action may move the set point very slightly and will result in the set point being moved slightly lower than the desired value. If necessary, this can be overcome by observing the error when locking the control and then resetting the adjustment to the desired point PLUS the error before locking.

Eg If the desired setpoint is 23.0 and the observed error on locking is 0.3 then adjust the control to read 23.3 and on locking, the setpoint will be moved to 23.0.

BATTERY BACKUP (OPTION)

If the external power supply to the instrument fails, the power supply circuitry in the instrument will automatically change over to the internal battery. When the instrument is being driven by its internal battery, the green 'STANDBY' LED on the front panel, will be lit and will remain on until external power is restored. The internal battery will provide normal operation for approximately 1 hour. When the battery has been discharged to such a level that instrument operation below this level would not be reliable, then a trip circuit will turn off the complete instrument and indicate this state by flashing the green 'STANDBY' LED at approximately 1 second intervals.

INTERFERENCE

Whilst all reasonable precautions have been taken within the instrument circuitry and the case is RF screened, it is still possible, in common with other instruments, that very strong, local Radio Frequency fields could cause interference. This will show up as erratic readings on the LED display. Where possible, RF Sources such as portable radio transmitters or telephones should not be operated very close to the instrument.

INSTALLATION

The 6000 Range of ANALOX Instruments are available in two forms:

1 Suitable for insertion in a 19 inch Rack Frame, occupying ¼ of a standard 3U Frame.

2 Suitable for direct mounting in an existing instrument panel.

For details of dimensions, cut-outs and mounting centres, refer to the Specifications of this handbook.

The frame mounting version should be inserted in a suitable rack and secured by the 4 corner screws and bushes supplied with the instrument. Refer to connection details below.

When fitting the panel mounted version, the bushes should be left attached to the instrument, as supplied and the whole assembly inserted into the panel, easing the bushes into the 10mm holes. Tightening the 4 screws will expand the bushes, locking them into the panel. If the instrument is subsequently removed from the panel, it is only necessary to remove the screws – the bushes should remain captive in the panel.

REAR PANEL CONNECTION

All inputs to and outputs from the instrument are connected via various sockets and terminals on the rear panel of the instrument. All connections are identified by labels on the rear panel but are repeated here for convenience.

POWER SUPPLY

Power for the instrument may be derived from 1 of 2 options:

1 AC power in the range 85 to 264 VAC, 47 to 63 Hz and connected via a standard IEC 3 pin plug/socket. A suitable lead is supplied with the instrument. Note that NO voltage selection is required when using this input – the instrument will operate from any voltage within the stated range. The fuse for this power input is mounted in the rear panel and is rated at 1 Amp ‘T’ type.

2 Low voltage DC in the range 12v to 32v with a ripple not exceeding 1 volt and connected via the battery charger type connector or the 2 way screw terminal type connector. THE LOW VOLTAGE DC SUPPLY SHOULD BE EXTERNALLY FUSED at a rating of 1 Amp using a ‘T’ type delay fuse. Note that connection polarity is important when using the DC input.

SIGNAL INPUTS AND OUTPUTS

All signal inputs and outputs are made to removable, screw terminal plugs. The main connector is located down the right side of the rear panel, when viewed form the rear.

Several signal input options are fitted to the Instruments. In the case of the Pressure/Depth Monitor Model 6000, the sensor transmitter should be connected to

terminals 14 and 18. Pin 18 is the sensor transmitter excitation voltage and should be connected to the positive terminal of the transmitter.

NOTE: Ensure that there is NO LINK between terminals 15 and 16 – this is only fitted when the instrument is used with a voltage input. Other signal inputs are not used on the 6000 Instrument.

Two analogue outputs, proportional to the measured input signal are available from the instrument. Pin 8 provides 0-1 volt representing 0-100% full scale Pin 9 provides a 4-20 mA current representing 0-100% full scale. Pin 7 is the common connection for both outputs. The voltage output should NOT be connected to a load less than 10,000 Ohms. The current output is powered from an internal nominal 24 volt supply and can operate into a load from 50 Ohms to 500 Ohms.

ALARM RELAYS

All instruments in the ANALOX 6000 range are normally fitted with two relays which operate in conjunction with the HI and LO alarms. The relays have single pole change-over contact arrangements, rated to switch up to 1 Amp @ 240v AC or 30v DC.

The relays may be configured to be energised or de-energised, when the instrument is in a non-alarm state. If the relays are configured to be in a normally energised state, this will provide a 'Fail-Safe' facility in that a total power failure will cause the relays to release and signal an alarm condition. However, the extra power drawn by the relays being energised for most of the time will reduce the time for which the instrument will operate on 'Battery Back-up'. Contact arrangement is shown on the rear panel. Instruments normally leave the factory with the relays configured to ENERGISE IN ALARM conditions.

SERIAL COMMUNICATIONS

This optional extra facility provides a means of passing information between the instrument and a computer or data logging system. Up to 15 instruments may be connected on a single, screened twisted pair cable and thence to the computer, the communication system used is RS485. A more detailed description of the system is available on request, from Analox. Connection to the serial system is made via a 3 way, screw terminal block on the rear panel, marked 'Serial Data Port'.

NOTE: This facility is an OPTIONAL extra and must be specified when ordering.

REMOTE DISPLAY REPEATER

A facility exists to allow connection of a 4 ½ digit remote display. This unit is contained in a short 1/8 DIN Case and receives its signal from the main unit via a screened, twisted pair, connected to the 0-1 Volt output terminals. The remote display is normally powered form either 230v AC or 115v AC. However, a 24v DC version can be specified at time of order.

REPAIR AND SERVICE

Apart form periodic sensor calibration, the instrument has been designed to provide long, trouble-free service. However, in the event of a fault condition arising, contact your local distributor or Analox Ltd, whose contact details appear on the front page of this handbook.

The instrument contains complex, precision circuitry which requires special test equipment to ensure correct internal set-up and calibration. Internal repairs or adjustments by the user are therefore NOT recommended.

ANALOX LTD WILL NOT ACCEPT RESPONSIBILITY FOR ANY EVENTS OCCURRING AS A RESULT OF UNAUTHORISED ADJUSTMENTS OR REPAIRS TO THE INSTRUMENT.

WARRANTY INFORMATION

We provide the following Warranties for the Analox 6000:

A 1 year sensor warranty.
A 1 year electronics warranty.

In both cases the Warranty period runs from the date of our Invoice.

We warrant that the equipment will be free from defects in workmanship and materials.

The Warranty does not extend to and we will not be liable for defects caused by the effects of normal wear and tear, erosion, corrosion, fire, explosion, misuse, use in any context or application for which the equipment is not designed or recommended, or unauthorised modification.

Following a valid Warranty claim in accordance with the above, the equipment, upon return to us, would be repaired or replaced without cost or charge but in our discretion we may elect instead to provide to you which ever is the lesser of the cost of replacement or a refund of net purchase price paid as per our Invoice on initial purchase from us. We shall have no liability for losses, damages, costs or delays whatsoever. We shall have no liability for any incidental or consequential losses or damages. All express or implied warranties as to satisfactory or merchantable quality, fitness for a particular or general purpose or otherwise are excluded and no such Warranties are made or provided, save as set out in this Clause 7.

In order to effectively notify a Warranty claim, the claim with all relevant information and documentation should be sent in writing to:

Analox Sensor Technology Limited
15 Ellerbeck Court
Stokesley Business Park
Stokesley
North Yorkshire
TS9 5PT

Or by e-mail to : info@analox.net
Or by Fax to : +44 1642 713900

We reserve the right to require from you proof of dispatch to us of the notification of Warranty claim by any of the above alternative means.

The equipment should not be sent to us without our prior written authority. All shipping and Insurance costs of returned equipment are to be born by you and at your risk. All returned items must be properly and sufficiently packed.

ANALOX 6000 SPECIFICATION

ELECTRICAL

Range:	0.0 - 400 MSW 0.0 - 1250 FSW (contact Analox for alternative ranges)
Resolution:	LOW: 1 metre or foot SW HIGH: 0.1 metre or foot SW
Accuracy:	+/- 0.3% Full Scale
Input:	4 - 20mA (External or Instrument Powered).
Display:	4 1/2 Digit High brightness 7 segment Red LED 15mm High Over-range All digits flash
Power Supply Options:	85 to 264 VAC, 47 to 63 Hz (Without switching) 12v to 32v DC Max Ripple 1v
Outputs:	0 – 1 Volt for Chart Recorder 4 – 20mA Internally Powered
Internal Battery (Option):	5 Volt 1.4 AH Nickel Cadmium Backup time Approx 1 Hour
Option Extras:	2 x Single Pole changeover relays Rated 1 Amp 240v AC 30v DC Configurable to be energised or De-energised when in Non-Alarm Condition.
Environmental:	Operating Temperature: 0-60^{O}C Storage Temperature: –40 to +80^{O}C Relative Humidity: 95% at 40^{O}C (Non. Condensing)

MECHANICAL

Dimensions		
Rack Mounted Version	Depth Overall:	245mm
	Height Overall:	129mm
	Width Overall:	107mm (1/4 19” x 3U Rack)
	Weight:	2 Kg
Panel Mounted Version	Depth Overall:	245mm
	Height Overall:	133mm
	Width Overall:	120mm
	Weight:	2 Kg
Panel cut-out Aperture:	Height:	112mm
	Width:	102mm
Mounting Centres:	Holes:	4 x 10mm
	Height:	22.5mm
	Width:	1.4mm
	Centred on Cut-out	

DISPOSAL

According to WEEE regulation this electronic product can not be placed in household waste bins. Please check local regulations for information on the disposal of electronic products in your area.